German teachers fly to the stars with SOFIA

16 July 2011

During the night of 14 to 15 July 2011, two German teachers flew on board the Stratospheric Observatory for Infrared Astronomy, SOFIA, for the first time. Wolfgang Viesser from the Christoph-Probst Gymnasium in Munich and Jörg Trebs from the Thomas-Mann Oberschule in Berlin were selected to join a team from the German SOFIA Institute (Deutsches SOFIA Institut; DSI) , the University of Stuttgart and the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) to experience first-hand precisely how 'live' research on SOFIA is conducted at an altitude of 14 kilometres.

A unique education programme

The SOFIA education programme, financed by DLR and run by DSI, is unique in Germany. The programme serves 34 partner schools, located in all German federal states. Its aim is to encourage schoolchildren in every year of the education system to pursue a career in engineering or the natural sciences – with particular emphasis on astronomy. The interdisciplinary SOFIA project is ideal for this, because teachers can, in the literal sense of the phrase, 'get on board'. "Our flying programme is therefore an essential element of our education programme," explains Cecilia Scorza, responsible for the education programme at DSI. "The selected teachers are expected to share their experience with their colleagues and pupils, to inspire them about SOFIA-related astronomy topics."

On their flight on board SOFIA, the two teachers were able to peer over the shoulder of astronomer Jochen Eislöffel as he carried out his research. Eislöffel works at the Thuringia State Observatory (Thüringer Landessternwarte; TLS) in Tautenburg and conducts research into a number of topics, including the ejection of material from young stars during their formation. He was assigned observation time for his scientific programme for the night of 14 to 15 July. During the NASA Pre-flight Review on the morning of 14 July, the German guests, together with the entire flight crew, were briefed about the planned flight schedule. At 20:00, the time had finally come; Wolfgang Viesser and Jörg Trebs boarded SOFIA with the scientists, SOFIA engineers and NASA pilots. The flight began and ended at SOFIA's home airport, the Dryden Aircraft Operations Facility in Palmdale, California.

Young star L1157 in sight

Jochen Eislöffel's observation target was the newborn star L1157 in the constellation Cepheus. L1157 cannot be observed in the infrared region of the electromagnetic spectrum from the ground, because the water vapour in Earth's atmosphere absorbs some infrared wavelengths. Eislöffel wanted to observe the 16-15-CO-Line at 1.84 terahertz using the German Receiver for Astronomy at Terahertz Frequencies (GREAT) and, from this, measure the outflow velocity of the material ejected by this newborn star. Once Jochen Eislöffel had finished his observations, which lasted 110 minutes, attention turned to celestial objects in other observation programmes on the flight schedule.

Deep concentration in the late hours

Viesser and Trebs observed with excitement as a focussed Eislöffel put all his efforts into obtaining the individual images at 02:00. "Six weeks of preparation for 110 minutes of observation time - that is truly love for science," marvelled Wolfgang Viesser. As soon as the observations were completed, the researchers started to analyse the data obtained and explained each step in the process to the two teachers. Teacher Jörg Trebs was surprised by the tricks that Eislöffel had to use to extract the desired information from the data he had

obtained: "in the conventional view through a telescope, the star seems almost tangible, but with spectroscopy, the work begins after the observations," Trebs said.

Video: SOFIA science flight on 12-13 April 2011

About SOFIA

SOFIA is a joint project of the German Aerospace Center (Deutsches Zentrum für Luft- und Raumfahrt; DLR) and the National Aeronautics and Space Administration (NASA). The project is being carried out under the auspices of DLR, with funds provided by the German Federal Ministry of Economics and Technology (Bundesministerium für Wirtschaft und Technologie; BMWi) under a resolution passed by the German Federal Parliament, and with funding from the German Federal State of Baden-Württemberg and the University of Stuttgart. The German SOFIA Institute (Deutsches SOFIA Institut; DSI) at the University of Stuttgart and the Universities Space Research Association (USRA) coordinate the scientific operations. Development work on the German instruments is financed through funding from the Max Planck Society (Max-Planck-Gesellschaft; MPG) and the German Research Foundation (Deutsche Forschungsgemeinschaft; DFG).

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SOFIA test flight in December 2009

SOFIA is a joint project of NASA and DLR. The astronomical observation flights take place at night. This photo was taken during a daytime test flight, during which the telescope hatch was opened for testing purposes.

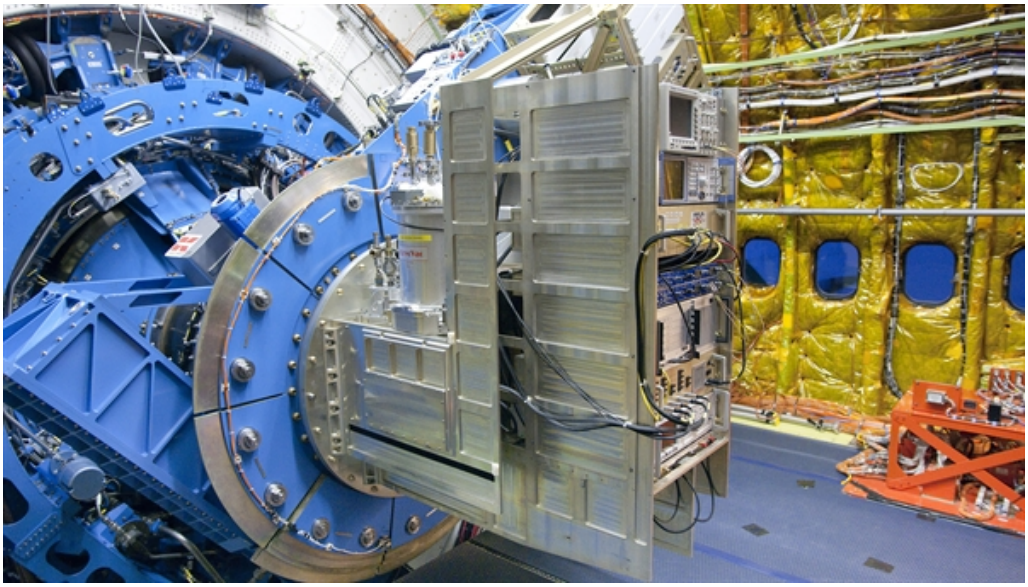
Credit: NASA.

The first German teachers to fly on board SOFIA, prior to their flight

During the night of 14 to 15 July 2011, two German teachers flew on board the airborne observatory SOFIA for the first time, with the aim of letting them participate in the astronomical observations and later report on these to their pupils. Second from left: Cecilia Scorza (German SOFIA Institute [Deutsches SOFIA Institut; DSI] Education Programme Coordinator); Centre: Jörg Trebs from the Thomas-Mann Oberschule in Berlin; Fourth from left: Wolfgang Viesser from the Christoph-Probst Gymnasium in Munich; Left and far right: the NASA SOFIA pilots.

Credit: NASA.

The German instrument GREAT in SOFIA



The GREAT receiver (metallic silver) mounted on the telescope (in blue) on the SOFIA airborne observatory.

Credit: NASA/Tom Tschida.

Explaining the results after the observations

Jochen Eislöffel (centre) from the Thuringia Federal Observatory in Tautenburg explains the results of the measurements to Wolfgang Viesser (left) and Jörg Trebs immediately after his observations. These two German teachers will now be sharing their experiences on the SOFIA flight with their pupils and colleagues at their schools in Munich and Berlin. In the future more German teachers will be able to fly on SOFIA missions.

Credit: NASA.

SOFIA, the Stratospheric Observatory For Infrared Astronomy

The Stratospheric Observatory For Infrared Astronomy (SOFIA) on its maiden test flight with a completely opened telescope hatch on 18 December 2009 over the Californian Mojave Desert. The 2.7 metre telescope, built in Germany, is visible through the opening in the fuselage of this Boeing 747SP. The test flight with an open hatch enabled engineers to examine the movement of air in and around telescope and door under experimental conditions for the first time.

Credit: NASA/C. Thomas.

German teachers shortly before their SOFIA flight

A first for the SOFIA education programme: during the night of 14 to 15 July 2011, German teachers flew on board the airborne observatory SOFIA for the very first time, with the aim of participating in the astronomical observations and later report on these to their pupils. From left to right: Wolfgang Viesser from the Christoph-Probst Gymnasium in Munich, Cecilia Scorza (German SOFIA Institute [Deutsches SOFIA Institut; DSI] Education Programme Coordinator), astronomer Jochen Eislöffel and Jörg Trebs from the Thomas-Mann Oberschule in Berlin.

Credit: NASA.

SOFIA during a daytime test flight

SOFIA is a joint project of NASA and DLR. The astronomical observation flights take place at night. This photograph was taken during a test flight in December 2009, during which the telescope hatch was opened during the day for testing purposes.

Credit: NASA.

First german teachers aboard SOFIA

Wolfgang Viesser (left) from the Christoph-Probst Gymnasium in Munich and Jörg Trebs from the Thomas-Mann Oberschule in Berlin were the first two teachers to fly on SOFIA.

Credit: DSI.

SOFIA high above the NASA Dryden Aircraft Operations Facility in Palmdale

SOFIA above its base, a hangar at the NASA Dryden Aircraft Operations Facility (DAOF) in Palmdale, California (front/right).

Credit: NASA.

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